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In an age of rapid change in school buildings, materials and curriculum, classroom teaching has not kept pace with progress in other areas. Continuous re-education is needed to maintain the competence of teaching personnel already in service. One way of providing this instruction is through the use of video tape techniques to demonstrate good teaching practice. Video tape has the advantage of providing realistic demonstrations in different teaching conditions and allowing instruction without disrupting normal school functions. This study investigated the effectiveness of video-taped demonstrations in changing practices and viewpoints of different types of teachers when used in varying ways. Video-taped demonstrations had a positive effect on quality of teaching, the greatest change occurring in those rated as needing the greatest improvement and among the highly motivated. Young teachers learned strategies faster but older teachers adapted learning more effectively to the classroom situation. Principals were fair raters of teacher improvement. A review of teacher training techniques and a bibliography are included. (BB)

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by
Lorraine Woolman Ed.D.

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THE EFFECT OF VIDEO-TAPED SINGLE CONCEPT DEMONSTRATIONS IN AN IN-SERVICE PROGRAM FOR IMPROVING INSTRUCTION

BY

LORRAINE WOOLMAN ED.D.

A PUBLICATION OF THE
BUREAU OF EDUCATION RESEARCH AND SERVICES
COLLEGE OF EDUCATION UNIVERSITY OF HOUSTON
HOUSTON, TEXAS 77004
1969

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FOREWORD

The videotape recorder has become an important addition to educational technology and its use has become widespread during the past few years. As increased production reduces the price, which has in the past been prohibitive, and as educators learn how to make more effective use of the VTR, its use in all facets of the educational process will become commonplace.

Until recently there have been very few research studies reported in the literature that have involved the use of videotape recordings. For this reason, this research study is being published to describe and document the use of the VTR as a valuable and dramatic tool for inservice education programs.

This publication is a condensation of a doctoral dissertation on file in the University of Houston Library. Readers with a special interest in the subject may wish to refer to the complete manuscript which provides additional statistical information. Although this study focuses on a rather specific usage of the VTR, many additional applications will be suggested for those having responsibilities for the improvement of instruction.

V. J. Kennedy,
Director

February, 1969

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CHAPTER I

THE PROBLEM AND DEFINITIONS OF TERMS USED

Educators, from early days, have demonstrated great concern over teaching and the practices of teachers in the classroom. History of education tells us continued use of old methods on the part of teachers has long been a cause of apprehension. Ancient Eygptian education began to decline when "all practices came under the domination of the older men who had lost the spur of desire and power to adjust to new conditions."[1] Plato designed a rigid curriculum and set up certain exemplary methods of teaching. Aristotle, Quintilian, and Rousseau placed emphasis upon the child, his experiences, and needs.[2] Dewey sought to inspire teachers to "test new ideas, explore new methods, and to criticize results."[3] These and others have made many valuable contributions to the teaching-learning process. Early problems are still in evidence, however, and educators continue to call for change in the classroom.

CHANGES TODAY

In the public schools. Today's school buildings are startling in their uniqueness.[4] We are living and teaching in a world of change; yet we hear such statements as "teaching procedures have changed little in the last 200 years."[5]

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[1]S. E. Frost, Jr., History of Education (New York: Barron's Educational Series, Inc., 1947), p. 9.

[2]Ibid., p. 138. [3]Ibid., p. 198.

[4]Andrew Hamilton, "Tomorrow's Schools Are Here Today," The PTA Magazine, LXI (October, 1966), 4.

[5]John W. Loughary, "Can Teachers Survive the Educational Revolution?" Phi Delta Kappan, XLVIII (January, 1967), 205.

Classroom practices are evidently not keeping pace with materials, machines, buildings, and curriculum organization. John Goodlad states that solutions to this dilemma are being tried in numerous schools over the United States. He groups these solutions into four clusters: (1) curriculum or "structured changes," (2) new patterns of organizing classes and personnel, (3) instructional materials, and (4) introducing and utilizing new technology.[6] His concern is that teaching practices tend to continue in old established patterns. He concludes by saying that "the pedagogical revolution has not yet enveloped the millions of teachers in our schools . . ."[7]

Teacher education. Colleges and universities are scrutinizing their teacher education programs, for much criticism has been directed at the preparation of young teachers. Although "more than 91% of all public school classroom teachers in 1964-65 has at least a Bachelor's degree,"[8] many are accused of being poorly equipped for teaching almost as soon as they come out of college. "The teacher who has been educated in a modern college or university is not equipped for long to keep abreast of today's fast-moving forces."[9] There are many differences of opinion concerning teacher preparation and teaching practices. Educators agree that the problem of teacher preparation is serious, for "in a rapidly changing society yesterday's knowledge quickly passes out of date. Children will not live in the same kind of a society in which they attended school."[10] This comment may also apply to teachers and their schooling.

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[6]John I. Goodlad, "The Educational Program to 1980 and Beyond," The Education Digest, XXXIII (December, 1967), 5-9.

[7]Ibid., p. 5.

[8]"Facts on American Education," The Education Digest, XXXII (October, 1966), 35.

[9]Walter K. Beggs, The Education of Teachers (Washington: The Center for Applied Research in Education, Inc., 1965), p. 104

[10]Ernest O. Melby, The Teacher and Learning (Washington: The Center for Applied Research in Education, Inc., 1963), p. 15.

TEACHERS AND IN-SERVICE EDUCATION

The importance of the teacher. Evidence points to the teacher and teacher-pupil relationship as an important focal point of concern in education. Books, media, materials, curriculum organization, and school buildings may change greatly with little or no effect upon the teacher in the classroom. Education, however, takes place within the individual classroom. The kind and quality of education depends upon the teacher. "Schools will never be any better than the teachers who man them."[11] Teacher reeducation is a continuing problem in many schools. Change in teaching practices is lagging behind our progress in technology, the needs of our changing society, and the sophisticated insights and aptitudes of today's children. "A tremendous challenge still lies ahead as to how to proceed in the actual teaching-learning situation for the most effective instruction."[12]

Need for in-service education. It is generally conceded that the in-service education of teachers is essential.

> At any time, continuing or "in-service" education could be a normal part of a teacher's work, we believe; in an era of change like the present there is a double need for discussion, continuing education, and curriculum development work.[13]

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[11]Roy Edelfelt, "The Supervisor's Part in Educating the New Teacher," Educational Leadership, XXIV (November, 1966), 150.

[12]Ruby H. Warner, Elementary School Teaching Practices (Washington: The Center for Applied Research in Education, Inc., 1962), p. 73.

[13]John Dixon, Growth Through English, England National Association for the Teaching of English (London: Cox & Wyman Ltd., 1967), p. 109

Studies of teacher opinions indicate that teachers, themselves, feel that they are not competent to handle many of the situations they find in the classroom.[14]

Effectiveness of in-service program. There are many opinions concerning the in-service needs of teachers. In-service education takes various forms over our nation. Each type of training has its proponents. The effectiveness of in-service education is constantly being questioned. The general dilemma seems to stem from indecision on the part of school people. Sparsity of research evidence on the effectiveness of in-service procedures and ambiguous educational objectives combine to retard progress in finding a solution to the problem of effecting change in teachers' classroom practices. Effective in-service programs are in great demand as the curriculum becomes more involved with new ideas and innovations. Reliable information on various types of in-service procedures is necessary to insure best results for a minimum expenditure of time and funds.

> Knowledge is limited concerning the effectiveness of various activities for improving learning by improving instruction. Actually, vigorous evaluations of in-service programs, curriculum-development activities, and other types of supervisory endeavors are few in number. Systematic research in this field is also quite limited and of poor quality.[15]

Classroom demonstrations for improving instruction. One technique for helping a teacher to improve her methods and teaching practices is that of classroom demonstration. In a study by Antell, demonstration lessons were high on the

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[14]Clifford P. Archer, "In-service Education," Encyclopedia of Educational Research, Chester W. Harris, editor (third edition; New York: The Macmillan Company, 1960), p. 703.

[15]Ben M. Harris, Supervisory Behavior in Education (Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1963), p. 39.

list of teachers' preferred supervisory practices.[16] Mort and Cornell found that teachers ranked observations in other systems as the second greatest help for improving instruction.[17] Palmer places demonstration lessons in second place on a list of felt needs by elementary teachers.[18] Opinions vary concerning the benefits received from demonstrations though teachers seem to feel the need for them. Burton and Brueckner point out that "it is a serious error to assume that the physical presence of any person will lead to significant observations without direction."[19] Two accounts of recent research, based upon the effects of closed-circuit television demonstration upon the teachers and student teachers, report that changes in teaching practices were evident.[20]

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[16]Henry Antell, "Teachers Appraise Supervision," Journal of Educational Research, XXXVIII (April, 1945), 606-11.

[17]Paul Mort and Francis G. Cornell, American School in Transition (New York: The Twentieth Century Fund, Inc., 1941).

[18]Wayne R. Palmer, "A Study of Existing and Desired Supervisory Services in the Indianapolis Public Schools" (unpublished Doctoral dissertation, Indiana University, Bloomington, 1955).

[19]William H. Burton and Leo J. Brueckner, Supervision, a Social Process (third edition; New York: Appleton-Century-Crofts, Inc., 1955), p. 166.

[20]Ben M. Harris, "A Research Study of the Effects of Demonstration Teaching Upon Experienced and Inexperienced Teachers" (Cooperative Research Project No. S-384, Office of Education, U. A. Department of Health, Education and Welfare; Austin: The University of Texas, 1966); and Betty Fay Coody, "A Study of the Impact of Demonstration Teaching on Experienced and Inexperienced Teachers Under Various Supervisory Conditions" (unpublished Doctoral dissertation, The University of Texas, Austin, 1967).

Both of these reports stress the need for more research in teacher change. The authors agree that there is need for data regarding types of supervisory procedure and the quality of the desired change to insure maximum gains for the teachers and their students.

Video-tape and in-service education. The use of video-taped lessons for in-service education is becoming popular. A number of study and demonstration centers are reported using video-tape for this purpose.[21] Video-taped lessons have some advantages over the classroom observation. The medium makes it possible to control certain variables which might appear in a classroom demonstration. First, undesired elements which creep into "live" lessons can be deleted from the taped demonstration. A well planned lesson does not always proceed as planned. It may change in process and fail to teach what it purported to teach. Editing of the video-tapes can eliminate unexpected mistakes due to slips in grammar, nervousness, or strain on the part of the demonstration teacher. Second, the lessons can be previewed before they are shown to teachers. This will permit planning for supervisory procedures designed to support the specific techniques demonstrated in a given lesson. Third, the video-taped lesson seems superior to the live demonstration in that any portion of it may be reviewed for discussion, or for more careful observation and evaluation.

Though video-taped lessons seem to have advantages over "live" demonstrations there is need for more research on the use of this medium and its real value to effect change in teacher classroom practices. The medium must be studied in the light of the particular conditions and influences under which it is used. If video-taped demonstrations can be established to be as effective as live demonstrations, they can be used at times when school is not in operation. This would solve one dilemma of in-service education. Providing for substitutes during the day is expensive, and the benefits gained must be weighed against the loss to the students when the teacher is absent.

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[21]National Commission on Teacher Education and Professional Standards, The Teacher and His Staff: Selected Demonstration Centers (Washington: National Education Association, 1967).

THE PROBLEM

Statement. The problem in this investigation was to study the effectiveness of video-taped classroom demonstrations to: (1) change instructional practices and viewpoints of teachers, (2) analyze the results of the demonstrations with and without certain supervisory and counseling procedures, and (3) relate the amount of change as seen by trained observers to the amount of change as revealed by an inventory of teacher opinion and understanding.

Statistical hypotheses. The following hypotheses were chosen to give direction and objectivity to the study:

1. There will be only chance differences at the .05 level of confidence, as revealed by the ratings of trained observers, among the control group who received no information, the experimental group who only viewed the tapes, and the experimental group who received supervisory and counseling procedures.

2. There will be only chance differences at the .05 level of confidence between the pre- and post-observer ratings of the teachers who received no information, the experimental group who only viewed the tapes, and the experimental group who received the supervisory and counseling procedures.

3. There will be only chance differences, as determined by the inventory of opinion instrument, at the .05 level of confidence among the control group who received no information, the experimental group who only viewed the tapes, and the experimental group who received supervisory and counseling procedures.

4. There will be only chance differences at the .05 level of confidence between the pre- and post-opinion inventory of the group who received no

information, the experimental group who viewed the tapes, and the experimental group who received supervisory and counseling procedures.

DEFINITIONS OF TERMS

Inventory of opinion. This refers to the instrument entitled Inventory Reflecting Teacher Concepts and Position Concerning Classroom Practices.

Scale. A term used to refer to the instrument entitled Scale for Estimating Tone and Quality of Classroom Pursuits.

Observer. Principals, supervisors, and master teachers who have been trained to use the Scale for Estimating Tone and Quality of Classroom Pursuits.

Group One. The group of teachers used as a control group and who have received no information.

Group Two. The experimental group of teachers who only viewed the tapes.

Group Three. The experimental group who viewed the tapes and who participated in the discussions following the viewing.

Interaction. Any communication, vocal or silent, which takes place between teacher and pupils.

Teacher change. Any change in the teacher's thinking, understanding, or classroom behavior as identified by one or the other of the two instruments used in this study.

Demonstration. A lesson or portion of a lesson which is observed by other teachers for the purpose of receiving additional information on methods and techniques of teaching.

Supervisory and counseling procedures. Any action taken by the supervisor to clarify or emphasize one or more aspects of a teaching demonstration.

LIMITATIONS OF THE STUDY

The teachers in the study were all from the fourth, fifth, and sixth grades in South Park Independent School District, Beaumont, Texas. They were selected by random sampling from all of the elementary schools in the district.

The video-tapes used in the study were developed by the South Park Independent School District in its Title III program funded by the Elementary and Secondary Education Act, 1965. Five tapes were used and were selected on the basis of evidence that the tapes contained demonstrations of the teaching practices identified by the instruments used in the study. Three tapes were in the field of Language Arts, one tape was in Arithmetic, and the other in Social Studies. Each tape demonstrated techniques which might be used in any of several subject areas.

Teachers in Group Two and Group Three were dismissed from classes in time to begin the viewing sessions by 3 p.m. The tapes were approximately 30 minutes long. Teachers in Group Two were dismissed after viewing the tapes. Group Three remained in discussion and question-and-answer sessions until approximately 4 p.m.

SUMMARY

Change and innovation in the materials and media of teaching, in the organizational structure of the programs, and in the planning and arrangement of school buildings make essential a substantial change and improvement in classroom instruction. The training of teachers today cannot hope to prepare teachers for the classroom of the future. Teachers' methods must change as new ideas, new technology, and innovations are introduced into the schools. In-service education is a requisite in an up-to-date school.

Evidence supports the fact that administrators and teachers, themselves, believe that the observation of good teaching helps teachers to improve their own teaching.

Video-taped demonstrations are being used in many places for in-service education for teachers. Little actual research has been done to support the belief in the effectiveness of the medium. Research in this area seems expedient in the light of present in-service training needs. The purpose of this study was to investigate the effectiveness of video-taped teaching demonstrations to produce change in teachers' classroom practices.

CHAPTER II

REVIEW OF RELATED LITERATURE

Information relating to the problem of this study has been found in reports on the use of classroom demonstrations, televised demonstrations, video-taped lessons, and kinescoped sequences as they are applied to the improvement of instruction in the classroom. Other references on in-service and supervisory practices, studies in teacher-change, as well as studies of teacher characteristics and teacher evaluation, have been used to support the importance of the study and the instruments of evaluation used.

Many of these reports have limited value as educational research but are indicative of the thinking and opinion among educational leaders. They reveal supervisory and instructional practices which are generally accepted by educators and teachers without actual supportive investigation.

TEACHER EDUCATION

Pre-service education of teachers. Teacher education programs follow a somewhat general pattern in providing for prospective teachers. Four areas are noted in most of the college programs:

> (1) A pattern of general education courses required of all students regardless of their major or area of concentration; (2) a sequence of courses to obtain depth in a major subject area if the student wishes to teach at the secondary level, or a broader spread over the whole spectrum of subjects taught to children in the grades if the candidate wishes to become an elementary teacher; (3) a sequence of professional courses that include foundations in educational history, philosophy, sociology, and psychology, and some courses

> in methods . . . ; (4) a series of formal and informal laboratory experiences with children . . . supervised teaching . . . or internship on the job.[1]

The fourth area, or laboratory experience, usually includes observation as well as experiences in teaching. Reappraisal is continuing to produce changes in the various offerings of colleges and universities. The federal government has made funds available for summer and academic-year institutes, for cooperative research and "funds for demonstrating the better use of media in teaching."[2]

Internship programs are gaining in popularity.[3] Such programs place much responsibility upon teachers in service to offer assistance and guidance. If the internship programs for teacher training are the best means for producing good teachers, we must be sure that teachers in service, involved in such a program, are models of good teaching. "There is reason to believe that we tend to teach as we were taught."[4]

In-service education of teachers. In-service education seems inevitable in the light of our total complex society. Beggs says:

> . . . teachers educated today--no matter what balance has been achieved between the academic and professional segments of the program--are prepared to serve an obsolete role and to teach in an obsolete way.[5]

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[1]Walter K. Beggs, The Education of Teachers (Washington: The Center for Applied Research in Education, Inc., 1965), p. 42.

[2]Ibid., p. 86. [3]Ibid., p. 36.

[4]Ben M. Harris, "In-Service Growth--The Essential Requirement," Educational Leadership, XXIV (December, 1966), 259.

[5]Beggs, op. cit., p. 102.

Leslie J. Bishop points up the fact that changes in curriculum bring about new methods of teaching.[6]

Curriculum modifications are occurring in rapid succession. Innovations, technology, new discoveries in science, new media, increased insight into teaching and learning serve to aggravate the problem of teacher in-service education. Ideas for in-service programs are many and varied.

> The point of view presented is that supervision is most effective in accomplishing its purpose (1) when it contributes significantly to problems and the accomplishment of the goals considered important by the teachers as well as the supervisors; (2) when the teachers are meaningfully involved in making and carrying out plans that affect them, with a part in determining what the supervisory service should be; (3) when supervision provides an atmosphere of acceptance, support, and understanding, and helps people experience feelings of worth; and (4) when supervision helps people make sound judgments and act on the basis of careful study of adequate and accurate information.[7]

Many of the problems in in-service education are due to the widely varied interpretations of the function of supervision. Some feel that effective supervision should change teachers. Others say "it is not a function of supervision to change people; . . . its function is to help people change . . ."[8] Five areas of approach to change are offered by Herrick:

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[6]Leslie J. Bishop, "In-service Education: Balance and Thrust," Educational Leadership, XXV (October, 1967), 11.

[7]Jane Franseth, Supervision as Leadership (Evanston, Illinois: Row, Peterson and Company, 1961), p. 29.

[8]Bishop, loc. cit.

> (1) Improvement through identification and definition of the objectives of the educational program, (2) improvement through the development of subject areas of the curriculum, (3) improvement through the development of programs of child study, (4) improvement through the recording and analysis of learning episodes, and (5) improvement through programs of action research.[9]

Teacher involvement is certainly a need for any in-service program. However, many obstacles stand in the way. Some of these are noted by Conlin and Haberman:

> The supervisor's basic problem is like that of the Boy Scout helping the reluctant little old ladies to cross streets when they would rather stay on corners. . . . As normal adult Americans, they do not want "help," and as teachers, they cannot admit needs.[10]

The problem of time for in-service programs is a serious one. Educators agree that "if teachers are too tired to listen, are bored, or otherwise not interested in the subject . . . there may be a minimum of learning."[11] This of course, refers to adding in-service meetings to the end of a teacher's day. Teachers must feel a real need for such a meeting and must receive what the teacher believes to be useful in teaching. Shuster cites one in-service project

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[9]Virgil E. Herrick, "Approaches to Helping Teachers Improve Their Instructional Practices," School Review, LXII (December, 1954), 527.

[10]Marcia R. Conlin and Martin Haberman, "Supervising Teachers of the Disadvantaged," Educational Leadership, XIV (February, 1967), 393.

[11]William H. Burton and Leo J. Brueckner, Supervision, a Social Process (third edition; New York: Appleton-Century-Crofts, Inc., 1955), p. 607.

where teachers were required "to view a program in mathematics at six o'clock in the morning."[12] Dionne says that "we have not found a way to free teachers to reach the level of competence being demanded by society."[13] This same author urges that the local school accept the responsibility to make possible teacher growth and development and to recognize individual differences among teachers. This responsibility for change in individuals is emphasized by other authorities in the field of education.

> It is my belief that administrators, supervisors, and teachers have a responsibility to change themselves and others in appropriate directions and that these directions will be different for different individuals.[14]

CLASSROOM DEMONSTRATIONS

Observation teaching has long been a part of teacher training programs. Educators have generally agreed that to observe good teaching is an acceptable means of learning how to teach. Wiles recommends intervisitation among teachers to promote teacher growth.[15] Writers distinguish between observation of classroom teaching and demonstration teaching. Demonstration teaching is "the presentation of a prearranged series of events to a group for their observation."[16]

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[12]Albert H. Shuster, "Principals and Teachers for Nongraded Schools," The National Elementary Principal, XLVII (January, 1968), 10-14.

[13]Joseph L. Dionne, "To Encourage Teacher Growth," Educational Leadership, XXIV (December, 1966), 267.

[14]Harris, op. cit., p. 260.

[15]Kimball Wiles, Supervision for Better Schools (Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1955), p. 216.

[16]Ben M. Harris, Supervisory Behavior in Education (Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1963), p. 82.

Observation guides and follow-up activities are suggested as a means of sharing impressions and analyzing the demonstration's effectiveness. Harris claims that intervisitation with no specific purpose and planning has given the activity a poor reputation. However, he feels that "techniques and procedures involved in the use of intervisitation activities are very much like those for the demonstration as far as the observers are concerned."[17] Perry tells of the use of demonstrations with student teachers in which students participate in discussion with the demonstrating teacher in the clarification of certain aspects of the lesson.[18]

Neuman gives as the rationale for an in-service program of education through demonstration teaching (1) that growth is enhanced by observation of his peers in realistic situations and (2) that demonstrations are relatively unique in in-service programs. He concludes that "it now seems clear that there is urgent need to advance the status of demonstration teaching . . . as a significant contribution to the profession."[19]

TECHNOLOGY AND DEMONSTRATION TEACHING

Use of filmed demonstrations. Filmed demonstrations have been used for in-service and pre-service training for some time. Harris reports that "16mm film has a special virtue in that the leader can use any part of the total production, rerun parts, and stop the film at will."[20] Teachers, however, complain that the filmed situation is rehearsed and unnatural.

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[17]Ibid., p. 90.

[18]Cereta E. Perry, "Helping the Prospective Teacher Become," Educational Leadership, XXIV (December, 1966), 261.

[19]C. E. Neuman, "In-service Education Through Demonstration Teaching," Journal of Secondary Education, XXXVI (January, 1961), 20-21.

[20]Harris, Supervisory Behavior in Education, op. cit., p. 86.

They prefer intervisitation in order that they may see the teacher in an unrehearsed situation. Leslie found that by involving students in selection of films and in organized discussion prior to and following showing of the films, attitudes changed toward films.[21] Similar involvement of teachers in the use of films for in-service education might be appropriate. Frazier reports that 5 half-hour films on human relations were telecast for San Diego teachers.[22] Principals previewed the films and planned discussion to follow the viewing of the films. Allen is of the opinion that:

> . . . the effect of films appears rather to be specific . . . the cumulative effect of more than one film on the same theme may be needed for any lasting attitudinal changes or reinforcement to take place.[23]

Telecasts and observation by remote control. Much has been written of observation by remote control, closed-circuit, and telecasts from the classroom. Accurate reporting procedures and statistical evidence of changes in teacher behavior are found in only a few of the reports.

The University of Wisconsin has developed a televised in-service program. This program has been utilized, with satisfying results in Iowa through WMT-TV, Cedar Rapids, Iowa. Teachers were required to attend four 3-hour seminars scheduled on Saturdays in addition to viewing the telecasts.

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[21]Elwood Kenneth Leslie, "Student Involvement and Changing Attitudes Toward Instructional Films" (unpublished Doctoral dissertation, The University of Illinois, Evanston, 1965).

[22]Alexander Frazier, "New Note," Educational Leadership, XXV (March, 1968), 603-07.

[23]W. H. Allen, "Audio Visual Communications," Encyclopedia of Educational Research, Chester W. Harris, editor (New York: The Macmillan Company, 1960), p. 118.

Only subjective evaluation of this program is available.[24] Use of closed-circuit television is reported from East Texas College, Commerce. Through the use of questionnaires and interviews effort has been made to describe, analyze, and appraise the first semester utilization of closed-circuit television observations in the teacher education program. The project was limited by difficulties and physical facilities but was considered satisfactory to all the participating groups.[25] A report from New York University described the use of television in teaching operative dentistry. Data were collected through written and practical examination of the students. The subjects in the study were divided into two groups. One group received demonstrations and lectures in class, while the other group received demonstrations and one-half their lectures via television. The report concluded that there was no real difference in any area other than in student attitudes.[26] Investigation has been done to determine the value of television as a means of continuing the medical education of physicians. Evidence in literature and in comments of medical educators and physicians indicated that most physicians do not continue their medical education after they begin to practice. The study revealed that 75 percent of the physicians contacted would accept televised

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[24]L. W. Cochran, "Television In-service Training: Iowa Picks Up the Wisconsin Course," Audiovisual Instruction, VIII (November, 1963), 674.

[25]Beatrice Stephenson Murphy, "A Case Study of the Early Stages of Closed-Circuit Television for Observation of Practice by Pre-service Students at East Texas College" (unpublished Doctoral dissertation, Columbia University, New York, 1964).

[26]Leon William Bloom, "Teaching Operative Dental Technics via Television, An Experimental Inquiry"(unpublished Doctoral dissertation, University of Southern California, Los Angéles, 1965).

programs on a fee basis. Use of television was not advocated as an "end all," because participation would be passive. The results of this survey led Harris to believe that television can provide a major share of the physician's continuing education.[27] Another report from East Texas College emphasized the use of observation by remote control to observe teaching techniques and pupil responses. This study was made with students in the college's teacher training program. Conclusions were based upon questionnaires, and several advantages were listed over traditional classroom observations.[28] In an in-service program for science teachers using demonstrations over closed-circuit television by Dr. Richard Suchman, participants were reported to be pleased with the results. Dr. Suchman is quoted as saying:

> This kind of medium is far superior to live demonstrations, particularly when demonstrating with lower primary children. I think teachers received a more realistic picture of how children behave under these conditions . . .[29]

Cassirer reports:

> In some cities, e.g., in Houston (Texas), such city-wide meetings are now replaced by special telecasts, which discuss problems of common interests and extend the subject supervisor's influence.[30]

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[27]J. J. Harris, "A Survey of Television in Medicine to Determine its Utility as a Means of Continuing the Medical Education of Physicians" (unpublished Doctoral dissertation, Stanford University, Palo Alto, 1964).

[28]B. U. Johnson and J. H. Taylor, "Observation by Remote Control," Texas Outlook, XLVIII (September, 1964), 26-27.

[29]F. C. Mayer, "Close-Circuit TV for In-service Training," American School Board Journal, CXLVIII (May, 1964), 39.

[30]Henry R. Cassirer, Television Teaching Today (New York: UNESCO Publications Center, 1960), p. 134.

Kate Bell reports the use of telecasts:

> . . . to stimulate interest, to impart information, to release creativity through practices, procedures, and materials which develop pupil competencies in original written expression.[31]

Boone and Hauser discuss the advantages of television demonstrations over observations in the classroom.

> An observer in the classroom is restricted to viewing at a distance, normally from the back of the room. Television can show teacher, students, visual devices, or whatever is important to the presentation of the lesson, all as if the observer were only a few feet away.[32]

Copeland, on the other hand, takes the view that lack of opportunity for a face to face exchange must be recognized as a weakness of television.[33] Rumford describes a course in elementary school methods via closed-circuit television in which it was concluded that television lectures were as effective as conventional lectures.[34] In a study of pre-student teaching laboratory experience, Stromquist recommends the increased use of closed-circuit television for directed

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[31]Kate Bell, "A Report of Practices, Procedures, and Materials Used by Teachers to Develop Pupil Competencies in Original Written Composition Grades Three Through Six in the Houston Public Schools" (unpublished Doctoral dissertation, University of Houston, Houston, 1963), p. 6.

[32]John R. Boone and Richard A. Hauser, "Teaching to Teach Through TV," The Education Digest, XXXI (March, 1966), 41.

[33]Jimmy Bryant Copeland, "An Investigation of Four Television Teaching Techniques via Closed-Circuit System" (unpublished Doctoral dissertation, University of Wisconsin, Madison, 1966).

[34]H. P. Rumford, "An Experiment in Teaching Elementary School Methods via Closed-Circuit Television," Journal of Educational Research, LVI (November, 1962), 139-43.

and common observation experiences as well as the use of video-tape and recorders to provide immediate feedback for the experience sessions.[35]

Some studies have been done on the effectiveness of teaching in various subject matter areas. Flatt reports research in teaching remedial mathematics with three types of "followship."[36] McGrath reports a study in the teaching of introduction to business which showed no significant differences among the research groups.[37]

A number of studies have been reported on the use of television for in-service training. It is difficult to describe and identify the various programs. Cook reports that each program tends to be planned to meet specific needs.[38] He emphasizes the fact that teachers, administrators, and other personnel must all be involved in planning for these programs. In an analysis of in-service television broadcasts

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[35]Marian Hughes Stromquist, "A Study of Pre-student Teaching Laboratory Experience in Secondary Education Programs of Selected College and Universities" (unpublished Doctoral dissertation, University of Kansas, Lawrence, 1966).

[36]James Levern Flatt, "The Relative Effectiveness of Three Types of Followship When Teaching Remedial Mathematics by Television" (unpublished Doctoral dissertation, George Peabody College, Nashville, 1965).

[37]Harold Morris McGrath, "The Effectiveness of Closed-Circuit Television as an Instructional Medium for Lecture Presentation of an Introduction to a Business Survey Course" (unpublished Doctoral dissertation, Colorado State College, Greeley, 1964).

[38]T. G. Cook, "A Study of In-service Education for Classroom Teachers Utilizing Instructional Television in Selected Public Schools in Michigan" (unpublished Doctoral dissertation, University of Michigan, Ann Arbor, 1964).

for elementary school teachers in the Des Moines schools, Munson found that content of telecasts should be carefully chosen, television teachers should be selected with deliberation, and other teachers should be prepared or briefed prior to the broadcast.[39]

Two recent reports on teacher change as a result of closed-circuit observation have special significance to those interested in in-service education. Harris states that though changes were indicated in all groups, "demonstrations, alone, though they be quite effective in getting the adoption of new specific practices, may not go much beyond that."[40] Coody reported change for all groups in behavior, procedures, and attitudes but adds that more research is needed on "effective supervision follow-up activities."[41] Both of these reports are on in-service with primary teachers and with pre-service teachers.

Video-taped sequences for in-service education. The National Commission on Teacher Education reports the use of video-tapes in many places over the country. In Monterey, California, a self-evaluation is being conducted with the use of video-tapes.[42] Twenty-eight schools in New York City are

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[39]Alvin Munson, Jr., "An Analysis of Educational Television In-service Telecasts for Elementary Teachers" (unpublished Doctoral dissertation, University of Nebraska, Lincoln, 1966).

[40]Ben M. Harris, "A Research Study of the Effects of Demonstration Teaching Upon Experienced and Inexperienced Teachers" (Cooperative Research Project No. S-384, Office of Education, U. S. Department of Health, Education and Welfare; Austin: The University of Texas, 1966), p. 222.

[41]Betty Fay Coody, "A Study of the Impact of Demonstration Teaching on Experienced and Inexperienced Teachers Under Various Supervisory Conditions" (unpublished Doctoral dissertation, The University of Texas, Austin, 1967), p. 204.

[42]National Commission on Teacher Education and Professional Standards, The Teacher and His Staff: Selected Demonstration Centers (Washington: National Education Association, 1967), p. 46.

experimenting with staff utilization. This project includes the use of many new technological devices including video-tapes.[43] Oakland Community College is conducting a learner-centered instructional program with a variety of new media including books, films, and video-tapes.[44] State University College, Buffalo, New York, is using video-tapes for lesson evaluation of the Teacher Corps interns.[45] Beaverton School District, Beaverton, Oregon, is using a video-tape recorder "to improve teacher performance and as a classroom resource."[46] Bethel School District, Eugene, Oregon, reports that "video-tapes are used by teachers and aides to improve instructional practices."[47] Abington High School, Abington, Pennsylvania, is focusing on better ways of individualizing teaching and learning. Several approaches to in-service education are also being explored, including local courses, use of video-tapes, and small group staff meetings.[48]

Video-tapes for pre-service education. Springman reports a program using video-taped classroom observations with secondary teachers in training.[49] He lists advantages for the video-tape use as: alleviating schedule and transportation problems, eliminating the problem of visitors in the classroom, and of providing selectivity for the training program. Two studies of video-tapes in teacher education are reported from Stanford University. These studies were made with student teachers, and attempts were made to measure results of supervisory efforts. One study was conducted with the use of video recordings as a substitute for live observations. It was observed that trainees who saw the video recordings registered more desired change in behavior than did the trainees who failed to receive either the video-tapes

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[43]Ibid., p. 52. [44]Ibid., p. 87. [45]Ibid., p. 101.

[46]Ibid., p. 112. [47]Ibid., p. 114. [48]Ibid., p. 116.

[49]Don Brady Springman, "Secondary Teacher Majors: Classroom Observations by Audio-Tape Devices" (unpublished Doctoral dissertation, Western Reserve University, Cleveland, 1965).

or the supervisory feedback.[50] In the other study students were given feedback of their own teaching. From the data gathered in this study it was concluded that these recordings of the student's own teaching were feasible and effective adjuncts to the supervisory conference.[51] Kriebs, in a study done at Temple University, reports that the findings indicate expanding the use of video-taped demonstrations for pre-service teachers.[52] Ohio University is using video-taped recordings and playbacks "for the student teacher in evaluating learning situations and individual instructional techniques."[53] An account from the University of Missouri tells of twenty-two teachers and a principal in an experimental fellowship program. Plans provided for using video-tapes of learning activities and to help chronicle the project.[54] In a study with pre-service counselors, Glen R. Ward found that when he used video, audio, and controlled treatment there were no significant differences among the groups.[55]

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[50]J. L. Olivero, "Video Recordings as a Substitute for Live Observations in Teacher Education" (unpublished Doctoral dissertation, Stanford University, Palo Alto, 1964).

[51]Keith Alan Acheson, "The Effects of Feed-back from Television Recordings and Three Types of Supervisory Treatment on Selected Teacher Behaviors" (unpublished Doctoral dissertation, Stanford University, Palo Alto, 1964).

[52]Jean Oak Kriebs, "The Effect of Video-taped Elementary School Science Classroom Demonstrations on Science Teaching Performance of Pre-service Teachers" (unpublished Doctoral dissertation, Temple University, Philadelphia, 1967).

[53]Boone and Hauser, loc. cit.

[54]Donald Hair, "The Road to Where?" Educational Leadership, XXV (January, 1968), 300-03.

[55]Glen R. Ward, "Educating Counselors by Video-tapes Using the Interpersonal Process Recall Technique" (unpublished Doctoral dissertation, Michigan State University, East Lansing, 1965).

EVALUATING TEACHER BEHAVIOR

Differences of opinions among educators concerning appropriate teaching practices make evaluation of teacher behavior quite difficult. "Perhaps most of all we need a comprehensive theory of teacher behavior and learning to channel the research efforts that undoubtedly will be undertaken."[55] And since this theory has not yet evolved, the task of selecting appropriate aspects of teaching behavior is left to the researcher.

Writers in the field of education have focused attention on interaction between pupil and teacher, evaluation, individual differences, child development, and motivation. Identification of these criteria in the teaching-learning process, it was decided, might give insight into the processes which produce a favorable learning situation.

> . . . Helping people learn . . . is a matter of facilitating changes in perception by creating conditions for personal exploration and personal discovery.[57]

General opinion among leaders in the field of education places the teacher in a most strategic position. Burton and Brueckner feel that the importance of the teacher cannot be overestimated:

> . . . His knowledge of his pupils, of his subject, and of the methods of learning and teaching; his skill in working with others, in handling pupils, in seeing and overcoming learning difficulties; his attitudes toward his pupils, toward teaching, and toward life in general; his interests, ideals, and aptitudes--all these are factors conditioning the learning of the pupils.[58]

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[56]Harold E. Mitzel, "Teacher Effectiveness," Encyclopedia of Educational Research, Chester W. Harris, editor (third edition; New York: The Macmillan Company, 1960), p. 1485.

[57]Franseth, op. cit., p. 51.

[58]Burton and Brueckner, op. cit., p. 322.

Melby concurs in the opinion that the teacher is of utmost importance.

> The central element in the creation of a learning environment is the teacher himself, his personality, his attitude, his manner of relating himself to his pupils, his own enthusiasm for learning, his own outlook on life--in short, what he is.[59]

The following aspects of the teaching-learning act seem indicative of the conditions favorable to learning.

Teacher-pupil interaction. The interchange between teacher and pupil reflects the flexibility of the teacher and the freedom the pupil has to express his ideas and opinions.

> A democratic approach to teaching in which objectives are defined through student-teacher discussion and planning will be most likely to involve assignments which are products of group planning, which are understood by members of the class and which are accepted by the students.[60]

Mehl and others reemphasize this idea.

> A sense of belonging results when the child is accepted by his teacher and group and has an opportunity to share in making plans and participating in the activities of a group of children to bring all of them into both small group and general group activity.[61]

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[59]Ernest O. Melby, The Teacher and Learning (Washington: The Center for Applied Research in Education, Inc., 1963), p. 38.

[60]G. Max Wingo, "Methods of Teaching," Encyclopedia of Educational Research, Chester W. Harris, editor (third edition; New York: The Macmillan Company, 1960), p. 855.

[61]Marie A. Mehl, Hubert H. Mills, and Harl R. Douglas, Teaching in the Elementary School (New York: The Ronald Press Company, 1958), p. 139.

Ryan uses teacher characteristics to evaluate the teaching act.[62] Most authorities admit that a teacher may assume a different characteristic to meet a different situation. No one response is suitable for all occasions, or for all students. However, certain teacher behaviors, such as sarcasm, are threatening to learners most of the time.

> Children who are targets of a parent's or a teacher's ridicule or sarcasm are not going to be eager, venturesome learners . . . they will be extremely cautious about venturing questions or answers that may expose them to scorn or belittling laughter.[63]

Amidon and others give an interesting account of Flander's System for verbal interaction analysis and its use with teachers as a means of improving teacher behavior.[64] Holt points up the fact that children are not always permitted to express their feelings and opinions.

> Are we ready to start doing less talking and more listening, to treat children so that they will grow up feeling, not like slaves and puppets, but like free and valuable men?[65]

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[62]David G. Ryan, Characteristic of Teachers (Washington: American Council of Education, 1960).

[63]Robert L. Spaulding, "Common Blocks to Learning," The PTA Magazine, LXI (September, 1966), 28.

[64]Edmund J. Amidon, Kathleen M. Kies, and Anthony T. Palish, "Group Supervision: A Technique for Improving Teacher Behavior," The National Elementary Principal, XLV (April, 1966), 54-58.

[65]John Holt, "Do Teachers Talk Too Much?" The PTA Magazine, LXII (October, 1967), 4.

Provision for individual differences. Much has been said about providing for the individual and it seems pertinent that we examine our teaching to see if we are really meeting the needs of individuals. John Holt reminds us that we are still teaching "class as a whole" in many schools. "Somewhere we got the crazy notion that a class would learn more efficiently if everyone was learning the same thing at the same time."[66] A quote from Ole Sand emphasizes the importance of the individual in relationship to a climate of change.

> Significant discoveries are being made about people and learning . . . discoveries that emphasize a vast range of differences among and within individuals and point to the great variety of ways in which people can learn. At a time when there is so much to be learned, and so urgent a need for such learning, we must create new teaching methods and adapt old ones to accelerate and enrich the teaching-learning process.[67]

Pupil involvement, interest, and attention. Teacher practices, planning, and behavior produce limited results if the pupil is not actively involved in the learning process. His motivation, interest, and attention are necessary to the teaching-learning situation. Much knowledge of subject matter, planning of procedures, and manipulation of materials are all important in the process of teaching, but "teaching avails little unless the student wants to learn."[68]

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[66] Ibid., p. 2.

[67] Association for Supervision and Curriculum Development, Role of Supervisor and Curriculum in a Climate of Change, 1965 Yearbook (Washington: National Education Association, 1965), p. 31.

[68] Philip H. Phenix, Realms of Meaning (New York: McGraw-Hill Book Company, Inc., 1964), p. 342.

Dewey describes education as:

> That reconstruction or reorganization of experience which adds to the meaning of experience and which increases ability to direct the course of subsequent experience.[69]

In the light of the above statement the following observation seems appropriate:

> When the environment is such, either in school or out, as to involve students in situations in which the creating and testing of meaning goes forward reflectively, then the conditions necessary for the reconstruction of experience exists.[70]

Burton and Brueckner sum up the whole situation concerning pupil involvement by stating emphatically that "there can be no learning unless there are reactions to the conditions about one."[71]

Teacher acceptance and evaluation of pupil effort. This is closely related to teacher-pupil interaction. However, shades of difference in manner and tone of voice might indicate an evaluation of an idea, a statement, or a question from the pupil. Evaluation of pupil effort is done at intervals all through the lesson.

> A frown, a shrug of the shoulder, or a quality of the voice is as much a part of his method as using the blackboard, asking a question, or holding a panel discussion.[72]

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[69]John Dewey, Democracy in Education (New York: The Macmillan Company, 1961), pp. 89-90.

[70]H. Gordon Hullfish and Philip G. Smith, Reflective Thinking: The Method of Education (New York: Dodd, Mead and Company, 1961), p. 337.

[71]Burton and Brueckner, loc. cit.

[72]Ibid., p. 568.

The teacher's patient, questioning attitude may lead a student to self-evaluation, whereas a negative response on the part of the teacher can bring about antagonism or frustration. Burton and Brueckner emphasize the importance of student self-appraisal and "self-diagnosis leading to an insight into the nature of his own difficulty."[73]

Appropriateness of the presentation to the age and maturity of the children. Evidence of the appropriateness of any lesson is shown in the responses of the pupils. Pupil's comments and questions, if they are allowed, will indicate interest and understanding.

> The activities in which children are ordinarily interested are those for which they have the necessary maturity and capacity for success . . . The child's ability to succeed in the task at hand is an important condition for continued effort.[74]

Prescott asserts that:

> Many children actually become maladjusted as a result of attending school. This is because the demand made upon them at school is inappropriate to their capacity, maturity levels, experience backgrounds, motivation and developmental tasks.[75]

Melby described the teacher's world as exciting but said that teachers must not pride themselves on:

> . . . the obscurity of their vocabulary and language usage (and they should) school themselves in the process of communicating big ideas with little words . . . The great teachers worked with their pupils in understanding terms.[76]

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[73]Ibid., p. 554. [74]Ibid., p. 187.

[75]Daniel A. Prescott, The Child in the Educative Process (New York: McGraw-Hill Book Company, Inc., 1957), p. 420.

[76]Melby, op. cit., pp. 74-75.

SUMMARY

Opinions and writings of educators give evidence that the training of teachers is inadequate and that the teachers in service are in need of retraining. Methods and ideas for the training of new teachers and the retraining of experienced teachers are numerous and varied.

Intervisitation is considered by both teachers and administrators as an instrument for improving teacher practices. This is time-consuming and expensive. Literature supports the fact that films, telecasts, and video-tapes are among the media used in providing similar experiences for teachers at times when they are not expected to be in the classroom. Research in the use of video-tapes is limited. In the light of the increased use of this media, careful research in its use is expedient.

Change is a necessary goal for many teachers in service. Literature reveals that classroom behavior, attitudes, methods of teaching, opinions, and beliefs concerning teaching and learning combine to reveal a teacher's effectiveness. Observation of practices and inventories of opinion on teacher-pupil interaction, provisions for individual differences, pupil involvement, teacher acceptance and evaluation of pupil effort, and the appropriateness of the presentation to the age and maturity of the child will serve as criteria for the evaluation of teacher change.

CHAPTER III

DESIGN AND DATA COLLECTION PROCEDURES

Research in this study proceeded from some of the common concerns of supervisors and other educators: (1) how to effect desired change in teacher classroom practices and (2) how to test the effectiveness of one of the technological devices, video-tape, which has had such an impact upon teaching in today's schools. The increased use of technological discoveries in our schools and in the in-service and pre-service programs for teachers has brought about the need for systematic testing in practical situations.

Can video-taped demonstrations substitute for classroom demonstrations in presenting methods and techniques of teaching? Can such devices help to bring about desired change in teaching practices?

RESEARCH DESIGN

Experimental field research. The study was designed as experimental research in a practical situation. Sixty-six teachers were chosen and divided into three equivalent groups. Teachers from grades four, five, and six were included.

Plans for the three groups were developed as follows: (1) a control group who did not view the video-tapes and received no information, (2) an experimental group who viewed the tapes only, and (3) an experimental group who viewed the tapes and who participated in discussions following each viewing.

PROCEDURES RELATED TO COLLECTION OF DATA

Examination of various rating scales failed to reveal one which included aspects of teaching this researcher considered important in evaluating teacher effectiveness. Two instruments were prepared and submitted to a board of judges consisting of individuals involved in supervision and/or the

training of teachers and classroom teachers. The resulting two instruments were designed for pre- and post-evaluation of the teachers participating in the study. The first instrument was an inventory of multiple choice items concerning teaching practices. The second instrument was in the form of a rating scale to be used by trained observers in an actual classroom teaching situation.

Inventory Reflecting Teacher Concepts and Position Concerning Classroom Practices. This Inventory contained 20 items with 4 multiple choices each. It was designed to gather information regarding teacher opinion and understanding relating to (1) teacher-pupil interaction; (2) provision for individual differences; (3) pupil involvement, interest, and attention; (4) teacher acceptance and evaluation of pupil effort; and (5) appropriateness of the presentation to the age and maturity of the children.

Scale for Estimating Tone and Quality of Classroom Pursuits. The second instrument contained 20 items related to observable episodes in the class. Each item included descriptive statements, as:

The teacher's lesson presentation was
_____ Interesting and creative
_____ Enthusiastic and animated
_____ Average and usual
_____ Of interest to only part of the class
_____ Uninteresting or dull

The Scale was arranged to estimate the extent and quality of the same aspects of good teaching as indicated in the above description of the inventory.

Validity of the instruments. Thorndike and Hagen stated that "validity refers to the extent to which a test measures what we actually wish to measure."[1] Educators often fail to

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[1]Robert L. Thorndike and E. P. Hagen, Measurement and Evaluation in Psychology and Education (second edition; New York: John Wiley & Sons, Inc., 1961), p. 160.

agree concerning desired teaching practices. Therefore, it seemed important to find agreement among practitioners in the field of teaching for validation of the instruments. In regard to such a procedure Thorndike and Hagen said that:

> . . . this is sometimes spoken of as rational or logical validity . . . .How well do these tasks represent what the best and most expert judgment would consider to be important knowledge and skills? If the correspondence is good, we consider the test valid; if poor, the validity must be deemed to be low.[2]

Validation of the Inventory Reflecting Teacher Concepts and Position Concerning Classroom Practices was based upon the results obtained from two groups of teachers attending the University of Houston. This instrument was first given to a group of teachers who were attending night classes. Answers to the multiple choice items were tabulated. Criteria for a satisfactory item were (1) that it have one clearly best answer and (2) that two of the other three answers have a measure of correctness in order to avoid "guessing."[3] Items which met the above criteria were left in the Inventory. All other items were rewritten, and the Inventory was submitted to another class of teachers attending the University of Houston. This time 20 of the items met the criteria and were used to make up the final instrument.

The instrument used by the observers for rating teachers, Scale for Estimating Tone and Quality of Classroom Pursuits, was submitted to a group of "experts" in the field of education. Forty-four supervisors, directors of education, consultants, and college professors in the state of Texas were asked to rank the descriptions for each item. These educators were asked to give each item's descriptive endings a number on a five-point scale from best practice (5) down to poorest practice (1). Thirty-three persons responded with ratings for the items. Some of the responses were discarded because of omissions, leaving 25 responses to be used in the selection of items

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[2]Ibid., p. 162. [3]Ibid., p. 71.

and in ranking the descriptive endings. Criterion for satisfactory items was that the item contain five descriptions which, in the tabulation of responses, were clearly indicated to rank from one to five.

Reliability. A Kuder-Richardson reliability coefficient was obtained on the pre-test scores of the Inventory.[4] The Kuder-Richardson Procedure (Formula 20) was used to test the internal consistency of the instrument. A reliability coefficient was not obtained for the Scale because of the subjectivity of the instrument. Both the validity and reliability of the Scale were dependent upon the judgment of experts in the field of education.

Selection of teachers for the study. Random selection was used to determine the identity of the 66 teachers who were to participate in the study. Teachers were chosen from all fourth, fifth, and sixth grade teachers of South Park Independent School District, Beaumont, Texas.

All teachers in a grade were assigned numbers. Each numeral was placed on separate slips of paper. The slips of paper were folded and placed in a container. Twenty-two teachers from each grade were selected by drawing from the container.

Procedure for grouping and coding of teachers. All teachers, chosen by random selection, were invited to meet with the director of the study. They were presented with a brief overview of the investigation, its significance, and an explanation of how their names were chosen. They were then given an opportunity to withdraw from the study if they wished. One teacher explained that he drove a bus and asked that his name be withdrawn. He was later replaced through random selection.

Groups were assigned by allowing the teachers to draw from a stack of cards which had been previously prepared. Three numerals, separated by hyphens, were placed on 66 cards.

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[4] Ibid., p. 181.

Numerals on the cards appeared as follows: 4 - 6 - 3. The numerals served as a code for identifying each teacher as follows: (1) the first numeral on each card indicated the grade taught, (2) the second numeral was the listing order of the teacher in the experimental or control group, and (3) the third numeral indicated the group. The control group was designated as Group One, the experimental group who only saw the video-tapes was called Group Two, and the experimental group who saw the tapes and participated in the discussions was called Group Three.

The stacks of numbered cards were then offered to the teachers. Stacks with beginning numbers four, five, and six were offered to fourth, fifth, and sixth grade teachers respectively. Each teacher received a code number on the card she or he selected from the stack.

Selection of the video-tapes. All the tapes used in the study were produced by South Park Independent School District's "Project for the Improvement of Teaching," funded by the federal Elementary and Secondary Education Act, Title III. Tapes were selected by a committee composed of the assistant director of the project, a master teacher in the project, and the researcher. Selections were based on the relation of the tape content to the aspects of good teaching mentioned in the explanation of the Inventory. Short descriptions of the tapes follows:

1. "Stand Up Paragraph," was the first video-tape shown. In this lesson a teacher leads a group of children to arrange their previously written sentences into a paragraph.

   This video-tape was chosen for its portrayal of the following: teacher-pupil interaction, utilization of individual talents and aptitudes, involvement of the pupils, pupil evaluation, and appropriateness of the material to the age and maturity of the children.

2. "Multiplication of Integers" was the second tape to be viewed. A group of fourth grade pupils gain

experience with positive and negative numbers as they manipulate small cars along a number line which has been attached to their desks.

Again, the teacher-pupil interaction is evident. The teacher's questioning attitude prompts the pupils to draw their own conclusions. All answers are accepted and the pupils are encouraged to explain and justify their responses. Each child achieves some measure of success before the teacher moves on to another child. The manipulation of the small cars serve two purposes: (1) the teacher is able to observe each pupil's response and evaluate his understanding, and (2) total involvement of the pupils is achieved.

3. "Grouping for Instruction" shows a class studying a unit on land forces. The children are working in groups with a variety of media on various projects in the study of topography. The teacher goes from group to group questioning and discussing their work with them. The teacher's questions are designed to lead each child to explain his ideas and purposes and to evaluate his own work.

4. "Listening for the Main Idea" is designed to help teachers motivate their students to better listening. The teacher begins the lesson by drawing from the students some ways in which they learn. She then focuses on listening as one way in which people learn and upon the importance of listening for a purpose. Students discuss their own problems in listening and list some of the things they might listen "for." Two audio-tapes are used to give the students practice in listening and to form a basis for discussion.

   There is much teacher-pupil interaction in this lesson. Pupil involvement is evident, pupil comments were encouraged, and questions were adapted to the needs and abilities of the students.

5. "Listening for Appreciation" was the fifth video-tape to be viewed. This demonstration shows the students listening to "The Road Not Taken" by Robert Frost. The poem is read by the teacher, and parts are reread as the lesson progresses. Teacher acceptance of pupil ideas and comments permits free interchange between the pupils as well as between teacher and pupils. The students become actively involved in this discussion, and interest is high.

Selecting and briefing the observers. Observers for the pre- and post-rating of the teachers were selected from the school district personnel who had previous experience in classroom observation. The 11 observers included 1 personnel director, 4 supervisors of instruction, 2 master teachers, and 4 elementary principals.

A training session was conducted for the observers. The session included discussion of the items on the rating instrument, rating one of the video-tapes using the Scale, and discussion of points of agreement and difference among the observers. Observers felt that by the end of the briefing period they were reasonably sure that they agreed on all points.

Administration of the Inventory. The Inventory Reflecting Teacher Concepts and Position Concerning Classroom Practices was completed by the 66 teachers at the first meeting. The schedule for viewing the tapes and the date for the first visit of the observers were given to the teachers at this time. Teachers in Group One were told that they were in the control group which would not view the tapes. They were asked to respond to the Inventory and to permit the observers to visit their classes. Teachers in the two other groups were given information concerning their activities in the study.

Rating of teachers by the observers. Schedules for visits were prepared for the observers. Each observer visited the classroom of six teachers during the following week. Teachers were asked to make no special preparation or change in the regular schedule. Teachers were observed and rated on

the Scale for Estimating Tone and Quality of Classroom Pursuits. Observations were made on the particular subject scheduled for that time. Subjects observed were language, spelling, writing, reading, arithmetic, art, social studies, and science. Observers were asked not to take the rating instrument into the classroom during the visit but to mark the instrument after leaving the teacher and class.

Viewing the video-tapes. Group Two and Group Three viewed five video-tapes. The viewings were scheduled over a period of 4 months. The average interval between viewings was 3 weeks, and only one tape was viewed at each meeting.

Teachers in Groups Two and Three were dismissed from their classes in time to begin the viewing by 3 p.m. The video-tapes were approximately 30 minutes in length and were shown without preliminary discussion.

Teachers in Group Two were dismissed after viewing each tape. Group Three teachers remained for discussion. The discussions usually began with a question designed to elicit comments on the methods of teaching used in the tape and upon the aspects of good teaching set forth in the purpose of this study. Comments and observations from the teachers flowed with little prompting, and no effort was made to direct or control the interaction once it began. Discussion periods were limited to 30 minutes. Audio-tapes were used to preserve these discussions for later evaluation.

The Inventory Reflecting Teacher Concepts and Position Concerning Classroom Practices was completed a second time by the teachers after they had viewed five of the tapes. Observers made a second visit to each classroom, and teachers were again rated on the Scale for Estimating Tone and Quality of Classroom Pursuits.

The principal of each school was later asked to evaluate the teachers in his school by means of the Scale and a short questionnaire. This information was to be used for purposes of comparison with the other data collected.

Research groups. Teachers were assigned to the control or to one of the two experimental groups when they drew

numbered cards at the first meeting prior to the beginning of the study.

The beginning population of each group was 22. Two teachers were withdrawn from Group Three during the period in which the tapes were being viewed. One of these teachers resigned, and the other was forced to miss several meetings because of illness. The listing numbers of these teachers were 1 and 20. Data on the same listing numbers in Groups One and Two were removed from the study in order to keep the groups equivalent in size.

Additional grouping arrangements. Scores were rearranged and studied in other classifications such as age, experience in teaching, teaching grade, sex, ethnic group, education, socioeconomic status of school area, high change and low change teachers (see pp. 47 and 48 for descriptions), rank order of scores, and quartile arrangement.

STATISTICAL PROCEDURES

Procedures for analysis of data included both descriptive and inferential statistics. In speaking of these branches of statistics Barnes said:

> In most instances, this kind of statistics (descriptive) enables us to work and think at a relatively high level of mathematical abstraction, unencumbered with the very weight, bulk, and inexactness of words. Another branch of statistics allows us to do still other things. . . . These other things are associated with statistical tests of hypotheses and statistical inferences.[5]

Descriptive statistical procedures. Measures of location such as means, quartiles, rank, range, deviation, and

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[5]Fred P. Barnes, Research for the Practitioner in Education (Washington: Elementary School Principals Department, National Education Association, 1964), p. 20.

variance as well as pictorial and graphical representations were used as aids in the study and interpretation of the data collected.

Inferential statistical procedures. The use of inferential statistics provided opportunity for making decisions, based on a sample of the population, concerning the population as a whole. The data were examined for the following purposes: (1) to determine whether or not the small samples (groups) were representative of the population, (2) to determine the homogeneity of the samples between and among the groups, and (3) to establish the significance of the differences between pre- and post-test means on each instrument for the individual groups.

The sets of sample means were tested for homogeneity by analysis of variance among and between the sets of scores. F-ratios were obtained on the group means of the pre- and post-Inventory scores and the pre- and post-Scale scores for the subjects in four different grouping arrangements. The grouping arrangements were the research groups, teaching grades, ages, and experience. According to Guilford:

> The basic principle of such a test is to determine whether the sample means vary further from the population mean than we should expect, in view of the variation of single cases from the same means.[7]

Variance was also used to test the significance of the difference between the pairs of pre- and post-test mean scores on both the Inventory and the Scale. F-ratios were obtained between the pre- and post-test means for the same grouping arrangements previously mentioned.

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[7]Joy P. Guilford, Fundamental Statistics in Psychology and Education (fourth edition; New York: McGraw-Hill Book Company, Inc., 1965), p. 269.

SUMMARY

Experimental field research in the effectiveness of video-taped teaching demonstrations to produce change in teachers was the general design of the study.

Sixty-six teachers were chosen by random sampling from grades four, five, and six in South Park Independent School District, Beaumont, Texas. Teachers were divided into three equivalent groups, two different treatment experimental groups and a control group.

Five video-taped demonstrations of classroom teaching practices produced by South Park's Elementary and Secondary Education Act, Title III program were used.

Two instruments were developed to measure the following aspects of teaching: teacher-pupil interaction, provisions for individual differences, acceptance and evaluation of pupil effort, and appropriateness of the presentation to the age and maturity of the pupils. Both instruments were used to obtain pre- and post-scores for the subjects.

Procedures for analysis of data included both descriptive and inferential statistics.

Analysis of variance was applied to test for homogeneity among and between the sets of scores and for testing the significance of the differences between the pre- and post-test means of the various groups.

Inferential statistical procedures enabled the researcher to determine whether the groups of teachers involved in the study were representative of the population and to determine the homogeneity of the sampling. These procedures also aided in establishing the significance of differences observed in the data.

CHAPTER IV

DISCUSSION OF FINDINGS

The data were processed on the 3300 Control Data Corporation Computer in the Department of Business Administration at Lamar State College of Technology, Beaumont, Texas.

The following null hypotheses were stated:

Ho_1 There will be only chance differences at the .05 level of confidence, as revealed by the ratings of trained observers, among the control group who received no information, the experimental group who viewed the video-tapes, and the experimental group who received supervisory and counseling procedures.

Ho_2 There will be only chance differences at the .05 level of confidence between the pre- and post-observer ratings of the teacher group who received no information, and the experimental group who received the supervisory and counseling procedures.

Ho_3 There will be only chance differences, as determined by the Inventory of Opinion instrument, at the .05 level of confidence among the control group who received no information, the experimental group who only viewed the tapes, and the experimental group who received supervisory and counsel procedures.

Ho_4 There will be only chance differences at the .05 level of confidence between the pre- and post-opinion Inventory of the control group who received no information, the experimental group who only viewed the tapes, and the experimental group who viewed the tapes and who received supervisory and counseling procedures.

Analysis of variance was employed to test the homogeneity between and among the groups and the differences between the pre- and post-mean scores on the two instruments. Analysis

of variance failed to produce significant F-ratios between and among the groups or between the pre- and post-test means for the two instruments. This resulted in failure to reject the null hypotheses.

The data were rearranged into other classifications in order to study the effect of factors not considered in the research groupings. The classifications were according to teaching grades, ages, and years of experience. Three groups were arranged for each classification and were as nearly equivalent in number as possible. For each grouping arrangement, analysis of variance was employed to test the homogeneity of the groups and to test the difference between the pre- and post-test means for each group.

F-ratios on the mean scores within and between groups were not significant for the teaching grade groups, the age groups, or the experience groups. Some of the F's on these groups were somewhat greater than those for the research groups. No significant F-ratios indicated that teaching grade, age, and experience had no great effect upon the sample, and the homogeneity of the sets of samples was further confirmed.

Analysis of variance on the differences between the pre- and post-test means for the subjects arranged by teaching grade, age, and years of experience disclosed no significant F-ratios. This justified the conclusions that there were no significant differences among the samples.

FURTHER INVESTIGATION

In addition to the above mentioned arrangements, the subjects were studied by ethnic groups, socioeconomic groups, high positive change and negative change teacher groups, and quartile arrangement.

Ethnic groups. Two ethnic groups made up the population of the sample. Twenty teachers were Negro and 40 teachers were Caucasian. The mean scores for the Negroes were higher than the means for the total group in most cases.

Group One Negro teachers showed greater gains between pre- and post-tests on both instruments. Group Two Negro teachers failed to show more gain on the Inventory than did the total Group Two population but scored better on the Scale. Group Three Negro teachers and the total population of Group Three made approximately the same gains between the pre- and post-means on both instruments.

Socioeconomic location of school. The school district participating in this study can be divided into three fairly equivalent socioeconomic areas: an upper socioeconomic area, a middle income area, and a low income area.[1] Teachers from the schools in these areas were grouped for study. Group Three teachers showed more uniform gains for the different socioeconomic status groups than did the other research groups. In Group One teachers from the low socioeconomic areas showed substantial gains on both the Inventory and the Scale. Teachers in Group Two revealed substantial gains for the upper economic area on the Inventory and for the low socioeconomic area on the Scale. Group Three teachers showed substantial gains on both instruments for all areas.

High positive change teachers. The highest one-third of teachers who made positive change between pre- and post-observations were grouped for investigation. The differences between pre- and post-observations were ranked in order from high to low. High positive change teachers were the first 19 teachers with highest positive differences between pre- and post-ratings on the Scale. The scores were ranked by quartiles. Figure 1 shows that high positive change teachers were those who generally ranked in the first and second quartiles on the first test. There were 12 teachers in the first quartile, 6 teachers in the second quartile, and 1 teacher in the third quartile on the pre-observations. On the post-observations 3 teachers were in the first quartile, 10 teachers in the second quartile, and 6 teachers in the third quartile.

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[1]C. H. Jackson (ed.), Cole's Directory: Cross Reference of Beaumont, Texas (Houston: Cross Reference Publications, Inc., 1966), pp. 4A-4B.

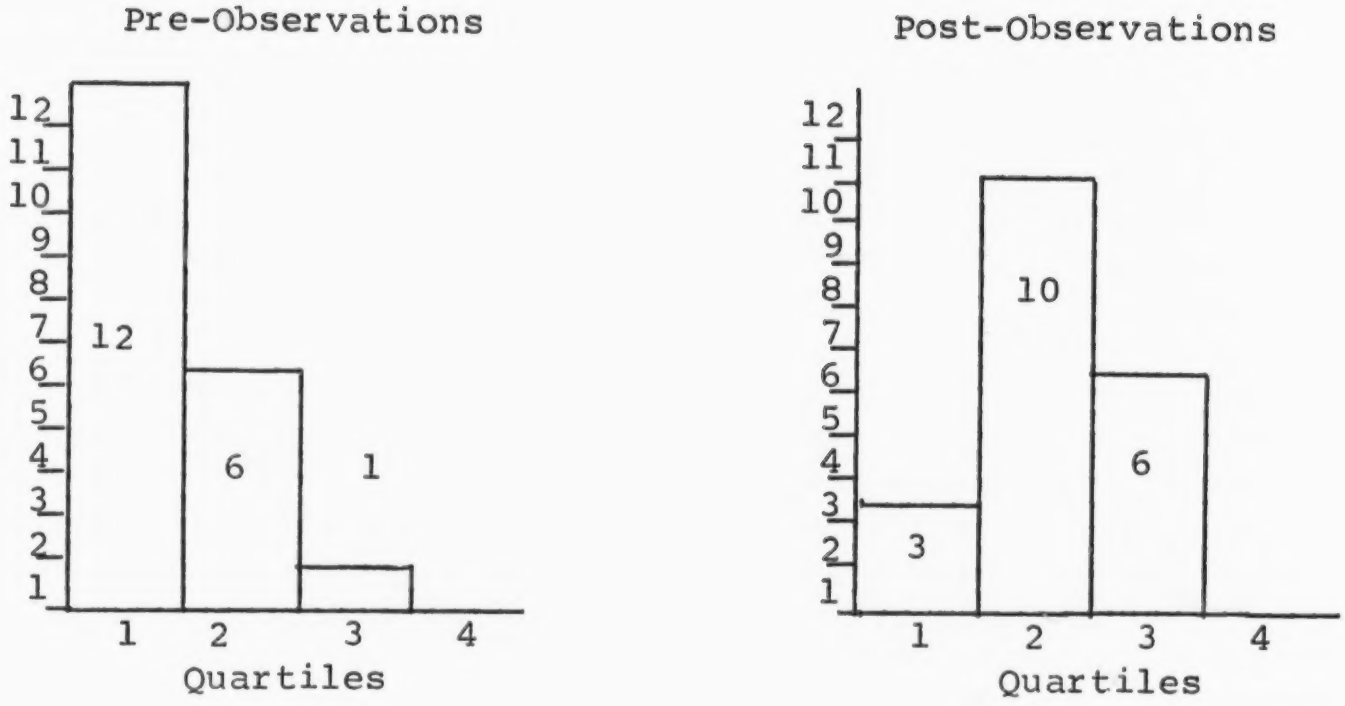

FIGURE 1

NINETEEN HIGH POSITIVE CHANGE TEACHERS
(BASED ON DIFFERENCES BETWEEN
PRE- AND POST-OBSERVATIONS)

Negative change teachers. Negative change teachers were those teachers who made lower scores on the post-observation than on the pre-observation. A pictorial representation of the quartile rank of those teachers shows that the majority of the negative change teachers were in the third and fourth quartiles ontthe pre-observations. The greatest change was in the first quartile with the number of teachers changed from 2 on the pre-observations to 8 on the post-observations. (Figure 2.)

Distribution of Inventory scores for the research groups. Scores for the Inventory disclosed that while some teachers in Group One improved their scores on the post-test, the general picture of the group remained equally distributed from the mid-point. Group Two showed somewhat higher scores on the pretests but the range was narrowed in the post-ratings with one less in the lower group. Group Three began with 11 in the lower group. Post-test scores showed only 4 teachers scoring 55 or lower.

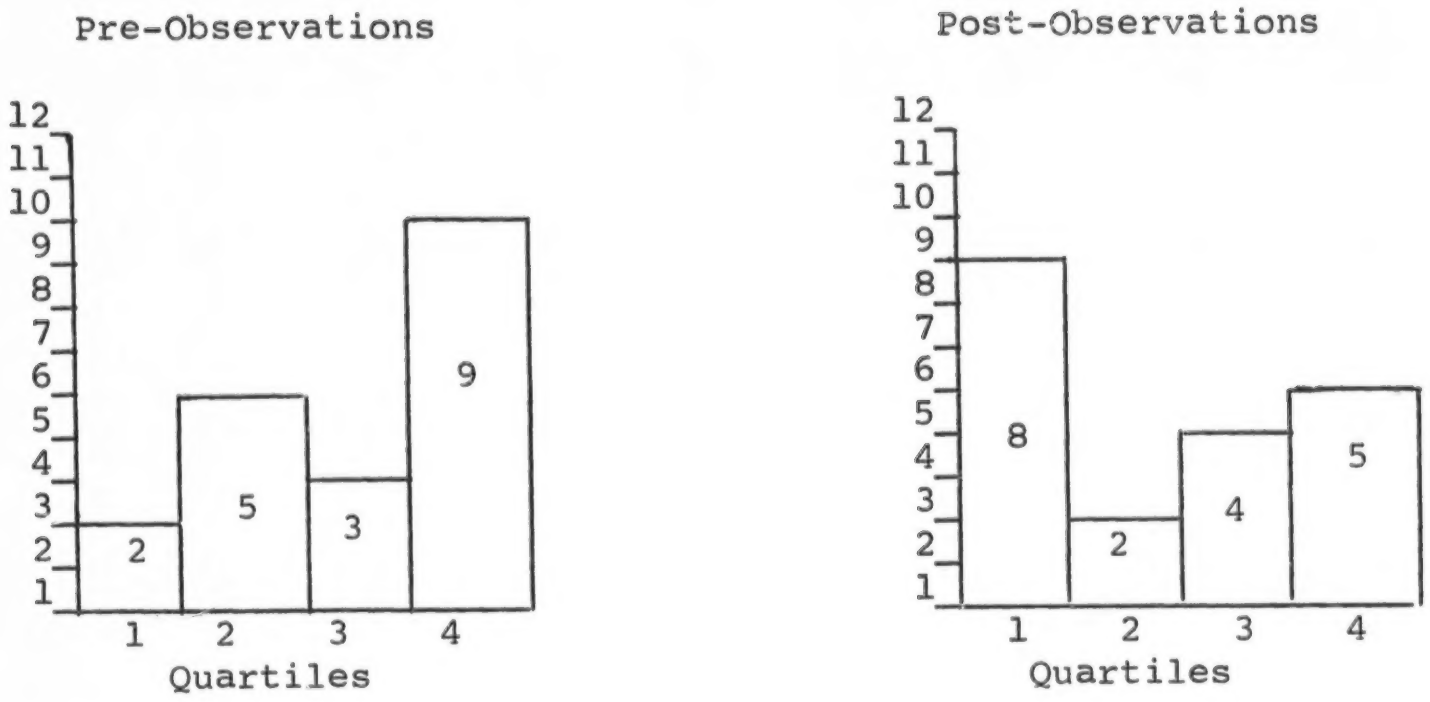

FIGURE 2

NINETEEN NEGATIVE CHANGE TEACHERS SCORING LOWER ON THE POST-OBSERVATIONS THAN ON THE PRE-OBSERVATIONS

Distribution of Scale scores for the research groups. Scores on the pre- and post-observer ratings were also compared by histograms. Comparison of these descriptive devices indicates some slight variations between the different treatment groups. All groups showed some improvement, but differences between groups were not remarkable.

Analysis of data according to classroom teaching practices: The Inventory. The two instruments in the study were designed to focus attention upon the following teaching practices: teacher-pupil interaction; provision for individual differences; pupil involvement, interest, and attention; teacher acceptance and evaluation of pupil effort; and appropriateness of the lesson to the age and maturity of the children. Table I presents a breakdown on the scores on the Inventory with the percent of items passed in each teaching practice category. The gains shown on this table generally favor Group Three though all groups show noticeable gains in "provision for individual differences," and gains on "pupil

TABLE I

INVENTORY REFLECTING TEACHER CONCEPTS AND POSITION CONCERNING CLASSROOM PRACTICES PERCENT OF ITEMS PASSED--RESEARCH GROUPS

Teaching Practice	Group	Pre-test (Percent items passed)	Post-test (Percent items passed)
Teacher-Pupil Interaction	I	73	69
	II	74	75
	III	64	74
Provision for Individual Differences	I	61	70
	II	63	73
	III	59	74
Pupil Involvement, Interest, and Attention	I	43	54
	II	51	53
	III	44	54
Teacher Acceptance and Evaluation of Pupil Effort	I	38	41
	II	54	56
	III	50	58
Appropriateness to Age and Maturity of Children	I	70	74
	II	71	79
	III	74	76

N = 60
n = 20

Percent based on total number of questions correct for the group divided by the total number of questions in the category times the number of teachers in the group.

involvement" were greatest for Group Two.

On the pre-test items relating to "teacher-pupil interaction" 73 percent were passed by teachers in Group One and 74 percent were passed by teachers in Group Two. The percent of items passed among those in Group Three was 64 percent. For the post-test the table shows that Group One had lost ground and only 64 percent of the items were passed, 74 percent of the items were passed among Group Two teachers, and 74 percent of the items passed by Group Three teachers. The table shows Group Three teachers had made a gain of 10 percent between the pre- and post-test scores.

In "providing for individual differences" the table shows improvement for all groups. Group Two and Group Three again made slightly more progress than Group One. The gains for Groups One, Two, and Three were 9, 20, and 25 percent respectively. Group One led the groups in "pupil involvement, interest and attention" with Group Three making approximately the same progress. Groups One, Two, and Three on the above category showed differences of 22, 2, and 20 percent.

In the fourth category "teacher acceptance and evaluation of pupil effort" Group Three showed the greatest percent of gain. Group Two was first among the groups in improvement in the category "appropriateness to age and maturity of the children."

In summary, Group Three ranked first in the categories "teacher-pupil interaction," "provision for individual differences," and "teacher acceptance of evaluation of pupil effort." This experimental group ranked second in pupil involvement, interest, and attention; and last in "appropriateness of the lesson to the age and maturity of the children." Group Two ranked first in "appropriateness of the lesson to the age and maturity of the children," second in "providing for individual differences," and last in the remaining three categories Group One, the control group, ranked first in "pupil involvement, interest and attention"; second in "appropriateness of the lesson to the age and maturity of the children" and in "teacher acceptance and evaluation of student effort"; and last in the remaining two categories.

Analysis of data according to classroom teaching practices: The Scale. Scores obtained from the rating of teachers with the Scale were treated in a manner similar to the above treatment of Inventory scores. Since items on the Scale were assigned different number values, the group average scores are shown. Three scores were available on the scale, the pre-observation, the post-observation, and the principals' ratings. Table II shows the average scores for the pre-observation, the post-observation, and the principals' observations. The teachers in Group One showed slightly more improvement in all except two categories. Group Three was rated substantially better than the others in the area of "provision for individual differences." Both Group One and Group Three made more improvement in adapting the "appropriateness of the lesson to the age and maturity of the children." Group one had a substantial gain over the others in the categories of "teacher-pupil interaction" and "pupil involvement, interest and attention."

The principals' ratings were somewhat higher than those of the observers. Average scores from the principals' ratings generally tended to rank the groups in first, second and third position with Group Three first, Group Two second, and Group One in third place. The only exception was in the category of "teacher acceptance and evaluation of student effort" where Group Two was first and Group Three second.

On both instruments Group Three showed the highest gain in the area of "provision of individual differences." Group Two ranked first in "pupil involvement" on both instruments. There were no other similarities between the scores for the two instruments.

TABLE II

AVERAGE SCORES FOR EACH OF THE TEACHING PRACTICES: RESULTS FROM THE PRE-OBSERVATIONS, POST-OBSERVATIONS, AND PRINCIPALS' OBSERVATIONS

Teacher Practice	Group	Pre-Observation	Post-Observation	Principals' Observation
Teacher-Pupil Interaction	I	3.51	3.74	3.93
	II	3.64	3.78	4.05
	III	3.61	3.81	4.15
Provision for Individual Differences	I	2.81	2.96	3.63
	II	3.03	3.16	3.66
	III	2.79	3.25	3.89
Pupil Involvement, Interest, and Attention	I	2.88	3.24	3.76
	II	3.30	3.56	3.89
	III	3.28	3.65	4.05
Teacher Acceptance and Evaluation of Pupil Effort	I	3.05	3.49	3.68
	II	3.30	3.58	4.14
	III	3.46	3.46	3.94
Appropriateness to Age and Maturity of Children	I	3.30	3.59	3.89
	II	3.58	3.75	4.14
	III	3.36	3.65	4.26

N = 60
n = 20

CHAPTER V

SUMMARY, CONCLUSIONS, AND IMPLICATIONS

SUMMARY

Teaching practices have been a concern of educators for centuries. The problem of in-service education and improvement of classroom teaching practices is urgent in the light of new technology and the explosion of knowledge during the present century.

Technological devices are now being recommended to promote efficiency in teaching and learning. One of the most widely used of these devices is video-tape. Video-taped lesson sequences have been widely used in teaching of public school and college courses via television. Many schools and colleges are now using video-tapes in the education of teachers in training and teachers in service.

Teachers feel the need to "see" how someone else teaches. Video-taped demonstrations offer a solution to one of the problems encountered in in-service education. Intervisitation of teachers is expensive and inconvenient as it takes the teacher out of his/her own classroom during the school day. The flexibility of the video-taped lesson permits stopping the showing of the tape for discussion as the lesson proceeds and replaying of the tape for clarification of doubtful points.

The purpose of the study was to explore the use of video-taped classroom teaching demonstrations to change the teaching practices of fourth, fifth, and sixth grade teachers.

Five video-taped demonstrations of classroom teaching practices were utilized for viewing. Teachers for the study were selected by random sampling. Sixty teachers, divided into 3 groups of 20, composed the population of the study. The three groups were: a control group who received no information, an experimental group who only viewed the tapes, and an experimental group who viewed the tapes and who participated in discussions following the viewings.

Two instruments were developed to measure results of the research. The Inventory of Teacher Concepts and Position Concerning Classroom Practices was developed to test the teachers' knowledge and understanding of good practices in the following: the teacher-pupil interaction; provision for individual differences; pupil involvement, interest, and attention; teacher acceptance and evaluation of pupil effort; and appropriateness of the lesson to the age and maturity of the children. The second instrument was the Scale for Estimating Tone and Quality of Classroom Pursuits. This was the rating scale to be used by trained observers in the classroom. The Scale was designed to measure the teachers' application of the good teaching practices mentioned in the description of the first instrument.

CONCLUSIONS

1. Young teachers seem to develop conceptual understanding of the strategies, but more experienced teachers seem to be more able to adapt the strategies shown on the tapes to their classroom practices than teachers with less experience.

2. The principals' ratings were so compatible with those of the observers that it was concluded they might be considered competent instructional supervisors.

3. The Negro teachers were reluctant to react verbally in the course of the discussions which suggests that the benefits reflected in their gains were largely the result of indirect counseling.

4. It seems that the greatest amount of change will generally occur among teachers who need it most if they are properly motivated.

5. Excellent teachers sometimes respond negatively to in-service programs when such programs are not suited to their needs and interests.

6. Discussions in conjuction with the showing of the films are valuable. The value seems more related to conceptual understandings than classroom practices.

7. Socioeconomic status of schools seem to have little bearing on a teacher's desire to improve herself or her adaptability to change through in-service education.

8. Since all teachers who participated were interested and profited from the study, it is highly possible that the Hawthorne Effect did operate in this study.

IMPLICATIONS

The investigations by both inferential and descriptive statistics produced some implications for future in-service training and for further research.

Length of the Study. The time between pre- and post-tests was approximately 5 months. The small gains between the pre- and post-tests seem to show that a longer period of study might have produced more significant results.

Random selection of teachers. The negative post-observation scores as shown in Table II seem to indicate that the video-taped in-service program may have been inappropriate for some highly competent teachers. Random selection of teachers from any school population will probably result in the choice of teachers who have excellent practices with no special need for in-service training and who may be reluctant to participate in such activities.

The time element. A long discussion session with small conferences might have produced more noticeable results. Viewing took place at the end of the school day. Discussion sessions were limited by the fact that meetings were scheduled to end at a given time.

In-service programs will yield best results when time for these activities is provided in the yearly school

schedule. Such progams might have more meaning for teachers when in-service programs can be scheduled on days when the children are not in school.

In-service programs. Further study is needed to identify individuals who respond to group in-service programs. It seems that such programs should be planned to serve certain groups of teachers with similar needs, and discussion groups should be so structured that a high interaction is possible.

Video-tape or live demonstration. The positive comments by the teachers indicate that video-taped demonstrations are acceptable and interesting to the teachers. Comments from the teachers implied that video-tapes are more acceptable to teachers when (1) the number of students in the demonstration more nearly approximates the number of students in the teacher's class and (2) the lesson is clearly indicated to be appropriate for the children in the observing teacher's class.

Control group versus experimental group. Generation of interest and enthusiasm in a group of teachers tend to affect others of their associates. Interchange of ideas and transference of ideas and enthusiasm seem to have widespread effect in producing teacher change. Teachers in the control group registered change which in many individuals was as great or greater than that made by members of the experimental groups. The changes as evidenced by the control group in this study suggest that a less structured program of supervision in which the teachers planned and conducted the activities might be more practical and more acceptable to many experienced teachers.

Supervisory procedures. The small evidences of uniformity of progress for teachers in Group Three indicate that more vigorous and perhaps more individualized supervisory and counseling procedures would tend to facilitate change.

Replication of the study. Replication of the study for a longer period of time with revision and lengthening the instruments might produce greater insight into the problems of in-service training through demonstration teaching and into the efficient utilization of the medium of video-tape.

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